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HEALTHY EATING BELIEFS IN MOTHERS AND THEIR ADULT CHILDREN

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Healthy eating beliefs and intentions of mothers and their adult children: an intergenerational transmission perspective

Dayyanah Sumodhee and Nicola Payne

Middlesex University, London

Corresponding author: Dr. Nicola Payne, Middlesex University, The Burroughs, London, NW4 4BT, UK (email: n.payne@mdx.ac.uk).

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Abstract

This study examined possible intergenerational transmission of eating beliefs and intentions between 60 mothers and their adult children. Maternal restrictive feeding practices were correlated with mothers' own healthy eating attitudes and subjective norms and with their adult children's subjective norms. Mothers' beliefs and intentions were correlated with their adult children's. Adult children's intentions to eat healthily were predicted by their attitudes and PBC, and also by their mothers' intentions and PBC. Mothers' own beliefs and intentions may be involved in shaping their children's beliefs and intentions into adulthood but their child feeding practices may have less of an influence.

Keywords: intergenerational transmission; mothers and adult children; healthy eating; theory of planned behaviour; attitudes.

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Introduction

Approximately 70,000 premature deaths in the United-Kingdom are attributable to deleterious eating habits (Department of Health, 2013). Poor diet and nutrition constitute a major risk factor for premature death and illnesses such as heart disease, Type 2 diabetes and certain cancers (National Statistics, 2014). Unhealthy dietary habits are associated with obesity, which affects 14% of children and 25% of adults in England (National Statistics, 2014). The family environment has been increasingly recognised as a crucial factor influencing individuals' eating behaviour, with parents shaping their children's food choices and preferences (e.g. Birch and Fisher, 1998; Scaglioni et al., 2011).

The family meal represents a potentially crucial moment to role-model children's eating attitudes and food preferences. Parents may shape children's early experiences with food and eating with their parenting practices during feeding. A study from Tiggemann and Lowes (2002) concluded that parental feeding practices, such as control, may provide a behavioural mechanism for the intergenerational transmission of eating attitudes and beliefs within families. According to Costanzo and Woody's model (1985), parents' control over their child's feeding is channelled by parental concern and perceptions regarding the child's risk for obesity. For example, the Child Feeding Questionnaire (Birch et al., 2001) focuses on two broad categories of factors: parental concern over their child's weight and risk of being overweight, and parental use of restriction and pressure to eat on the child's eating. Parental feeding style represents a mechanism shaping children's food consumption and preferences (Patrick et al., 2005). In particular, mothers report greater use of restriction of their young daughters' food when they had themselves weight and eating concerns (Francis and Birch, 2005; Tiggemann and Lowes, 2002). Hence it seems that mothers' own beliefs and attitudes towards their eating behaviours have an impact on their feeding practices with their offspring.

Much of the literature on intergenerational transmission has focused on eating disorders and

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has found evidence that young children of mothers with eating disorders may have feeding problems (Cooper et al., 2004; Whelan and Cooper, 2000) and later eating disorders (Stein et al., 1999; Strober et al., 2000). Other research has focused on disturbances in eating attitudes in a non-clinical population. For example, Elfhag and Linné (2005) revealed a relationship between mothers and their adolescent daughters in drive for thinness, body dissatisfaction, emotional eating, uncontrolled eating and cognitive restraint.

Some research has investigated whether mothers' influence is still present during early adulthood. This period is important as this is when offspring often leave the parental home and start to demonstrate autonomy in their food choices (Bassett et al., 2008). Cooley et al. (2008) found that daughters' perceptions of mothers' weight concerns and negative comments from mothers predicted young adult daughters' body dissatisfaction and eating attitudes. Baker et al. (2000) also found some evidence that intergenerational transmission may be more likely to occur through direct criticism from parents than through children modelling parents' eating attitudes and behaviours. Additionally, they found that young adults' eating attitudes were more strongly related to perceptions of their parents' attitudes than to parents' own self-reports. For example, there was no association between children's and parents' self-reported disturbances in eating attitudes measured by the Eating Attitudes Test. They suggested that this may explain why some research using parental self-report measures has not supported the intergenerational hypothesis (e.g. Kanakis & Thelen, 1995; Steiger et al., 1996).

Other research on intergenerational transmission has investigated healthy eating beliefs and attitudes rather than disturbances in eating attitudes. For example, Goode et al. (2008) found that paternal history of cardiovascular disease had no impact on adult sons' and daughters' eating behaviour whereas maternal history of cardiovascular disease negatively influenced adult daughters' eating behaviour. They concluded that intergenerational transmission of eating attitudes and behaviour might be limited to mothers rather than to fathers and that mothers play a key role when

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considering the influence of parents on children's food choice. However, most previous research on intergenerational transmission has not taken a particular theoretical approach to examine these beliefs. Social cognition models help explain the determinants of behaviours such as eating and arguably one of the best known is the Theory of Planned Behaviour (TPB). This has been used extensively to explain food choice and healthy eating behaviour (c.f., Conner and Armitage, 2002). The TPB postulates that the proximal determinant of behaviour is an individual's intention to perform the behaviour (Ajzen, 1991). Behavioural intention in turn is determined by an individual's attitude (beliefs about the positive or negative consequences of performing the behaviour), subjective norms (perceptions of whether others will approve or disapprove of him/her performing the behaviour) and perceived behavioural control (PBC; perceptions of how easy or difficult the performance of the behaviour is). Studies by Hewitt and Stephens (2007) and Melbye et al. (2012) are among the few that have used social cognition models, as well as parental feeding practices, to explore children's healthy eating, although their focus was on young children rather than young adults. Hewitt and Stephens' study (2007) showed that children's beliefs from the TPB explained 51% of the variance in children's intentions to eat healthy foods. However, parental feeding practices (responsibility, concern about weight and restriction) did not explain any further variance. Melbye et al. (2012) found that children's beliefs from the Attitude-Social influence-Self-efficacy model (similar to the TPB) explained 32% of the variance in children's intentions to eat fruit and 42% of the variance in children's intentions to eat vegetables; self-efficacy was the key predictor. However, only one of twelve parental feeding practices was also a significant predictor of intention. In both of these studies, children aged 10-13 were the focus and only children's beliefs were examined, so the relationship between parents' beliefs and children's beliefs and intentions was not explored.

The TPB has been successfully applied to explain healthy eating among young adults (e.g. Backman et al., 2002) but very few studies have explored the influence parents may have on adult

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children using this model. Some positive associations between young adults and their mothers and grandmothers were found in behavioural beliefs, attitudes and intentions to eat 20 foods (Stafleu et al., 1995). However, there were no positive associations for many foods in this study, so parents and their children appear to only share some of the same beliefs. Additionally, the influence of beliefs did not extend beyond the next generation, as there were almost no associations between young adults and their grandmothers. However, this study did not compare all the components of the TPB and did not examine the extent to which parents' beliefs may predict children's intentions.

The present study

The current study examines the relationships between mothers and their adult children in eating beliefs and intentions in order to explore possible intergenerational transmission of eating patterns. Mothers were chosen because they tend to spend significantly more time than fathers in direct interactions with their children across several familial situations, including mealtimes (Mallan et al., 2013) and they are thought to play the key role in influencing children's eating (Goode et al., 2008). Much of the research in this area has focused on relationships between mothers and children in disturbance in eating attitude, including how parental feeding practices may be involved. However, little research has investigated whether parental feeding practices and disturbance in eating attitude may undermine adult children's healthy eating intentions, especially in conjunction with a solid theoretical basis for investigating such intentions like the TPB. Hewitt and Stephens (2007) and Melbye et al. (2012) found that parental feeding practices had little influence on young children's healthy eating intentions over and above the influence of children's own beliefs, but they did not examine the impact of parents' beliefs, including disturbance in eating attitude. While some studies (e.g. Stafleu et al., 1995) have investigated the relationship between parents' and adult children's beliefs and intentions, they have generally not examined whether parents' beliefs may predict children's intentions. Additionally, the operationalization of the TPB in many of these studies has been problematic due to inappropriate measurement and constructs being excluded.

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Therefore the present research explored the possible intergenerational transmission of eating beliefs and intention between mothers and their adult children by using the TPB, including examining whether parental feeding practices and disturbance in eating attitude may undermine adult children's healthy eating intentions. A clearer understanding of maternal influence, especially beyond childhood, might benefit the design of health promotion programmes.

Thus the research questions of the current study are:

1. Are mothers' recollections of childhood feeding practices related to mothers' and adult children's healthy eating beliefs and intentions and disturbance in eating attitude?
2. Is there is a difference or a relationship between mothers' and adult children's corresponding healthy eating beliefs and intentions and disturbance in eating attitude?
3. Is there a difference in the predictors of healthy eating intention between mothers and adult children?
4. Do mothers' healthy eating beliefs, disturbance in eating attitude and recollections of childhood feeding practices predict adult children's healthy eating intentions over and above adult children's own beliefs?

Methods

Participants

Sixty dyads of mothers and their adult children were recruited from a University through convenience sampling. Therefore the total sample was 120 participants. The group of mothers consisted of 60 mothers aged between 44 and 65 years old ($M = 54$, $SD = 4.25$). The group of adult children consisted of 60 participants aged between 18 and 33 years old ($M = 24$, $SD = 4.35$). Sixty-five percent of adult children were female and 35% were male.

Materials

Mothers and adult children completed a questionnaire comprising the Eating Attitudes Test and beliefs about healthy eating. Mothers also completed the Child Feeding Questionnaire. The

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participant was asked to provide a personal code so that the researcher would be able to match mothers' and adult children's responses while preserving their anonymity.

Child Feeding Questionnaire (CFQ, Birch et al., 2001). The CFQ is a self-report measure of parental feeding practices, which was completed by mothers. It was altered slightly so that mothers were asked to recall their practices when their child was young and only three subscales of the CFQ were used as follows:

Restriction. The extent to which mothers restricted their child's food intake was assessed by eight items. For example: "I had to be sure that as a child my son/daughter did not eat too many sweets (candy, ice cream, cake or pastries)". Response options ranged from 1 (Disagree) to 5 (Agree) where 5 referred to a high level of restriction ($\alpha = .70$).

Pressure to eat. Maternal pressure on children to eat was assessed by four questions on a 5-point scale ranging from 1 (Disagree) to 5 (Agree) with 5 referring to a high pressure to eat. An example item is: "As a child I believed that my son/daughter should always eat all of the food on his/her plate" ($\alpha = .50$).

Concern about the child's weight. Three items were used to gauge mothers' concerns about their child's weight when they were young. For example: "How concerned were you about your son/daughter becoming overweight when he/she was a child?". Items were assessed on a 5-point scale ranging from 1 (Unconcerned) to 5 (Very concerned) where 5 indicates a high degree of concern ($\alpha = .81$).

Beliefs about healthy eating.

Each component of the theory of planned behaviour was assessed in relation to intention to eat healthy food regularly. The self-administrated measure adapted from Ajzen was completed by both mothers and adult children. The four sub-scales were as follows:

Attitude. Participants were asked to rate on a 7-point scale their attitudes towards healthy eating using four items, each with the stem "for me eating healthy foods regularly is....". Response

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options varied according to each question, including 1 (Extremely good) to 7 (Extremely bad) and 1 (Interesting) to 7 (Boring). For all attitude items, a low score referred to positive attitudes (mothers' $\alpha = .77$; adult children's $\alpha = .66$).

Subjective norm. Four items were used to measure participants' subjective norm on a 7-point scale. An example subjective norm item is: "Most people whose opinions I value would approve of my regularly eating healthy food" with response options ranging from 1 (Strongly agree) to 7 (Strongly disagree). A low score means that healthy eating is highly influenced by others (mothers' $\alpha = .65$; adult children's $\alpha = .54$).

Perceived Behavioural Control (PBC). The extent of participants' PBC was assessed by four items rated on a 7-point scale. For example: "Whether or not I eat healthy food regularly is completely up to me" with responses from 1 (Extremely agree) to 7 (Extremely disagree). A low score means high PBC (mothers' $\alpha = .63$; adult children's $\alpha = .68$).

Intention. Participants' intention to eat healthily was measured by three items. For example: "I intend to eat healthy food regularly" with responses ranging from 1 (strongly agree) to 7 (strongly disagree). For all items on this scale, a score of 1 would be interpreted as a high intention to eat healthy food (mothers' $\alpha = .83$; adult children's $\alpha = .88$).

Eating Attitudes Test (EAT-26).

The EAT is a 26-item questionnaire with a 6-point Likert scale ranging from 'always' to 'never'. A score of more than 20 would indicate a disturbance in eating attitude and a score above 30 would indicate a high risk of diagnosed eating disorder (Mintz and O'Halloran, 2000). To score participants' responses, 'Always' was scored three points, 'Usually' two points and 'Often' one point. 'Sometimes', 'Rarely' and 'Never' were all scored zero (mothers' and adult children's $\alpha = .80$).

A Cronbach's alpha above .70 is generally accepted as representing a good scale reliability. While the figures for some of the scales measured in this study are lower than this, it was not possible to improve these by removing items, and Kline (1999) suggested that when measuring

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psychological constructs such as these, values below .7 are considered acceptable.

Procedure

This study was approved by the University Ethics Committee. Adult children were asked if they were willing to complete the questionnaire and mothers were also asked (directly or by email, as addresses were given by the adult children) if they were willing to participate. Adult children were approached in person and given an information sheet and asked to sign a consent form before completing the questionnaire. Where mothers were not available in person they were sent an information sheet by post or by email and either provided with a stamped addressed envelope to send back their consent form and questionnaire, or sent an electronic version of the questionnaire to complete and return by email, along with a consent form on which they were asked to tick a box to give their consent rather than a signature.

Results

Descriptive statistics for the Child Feeding Questionnaire (restriction, pressure to eat, concern about child weight), the theory of planned behaviour (attitude, PBC, subjective norm, intention) and the Eating Attitudes Test (EAT) are presented in Table 1.

Insert Table 1 about here

Research question one: Are mothers' recollections of childhood feeding practices related to mothers' and adult children's healthy eating beliefs and intention and disturbance in eating attitudes?

Bivariate correlations were conducted to investigate relationships between mother's feeding practices from the CFQ and mothers' and adult children's beliefs from the TPB and disturbance in eating attitudes from the EAT. Results of this analysis are presented in Table 2. Increased restriction in mothers' feeding practices was correlated with more positive attitudes, higher subjective norms

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and higher EAT scores in mothers, and increased concern about child's weight was also correlated with increased EAT scores in mothers. However, increased restriction in mothers' feeding practices was only correlated with higher subjective norms in their adult children.

Insert Tables 2 about here

Research question two: Is there a difference or a relationship between mothers' and adult children's corresponding healthy eating beliefs and intentions and disturbance in eating attitudes?

To address the second research question, independent t-tests were conducted to compare mothers' and adult children's scores on beliefs from the TPB and disturbance in eating attitudes from the EAT. There was no significant difference between mothers and adult children in their attitude ($t(118) = -1.31, p = .19$), subjective norm ($t(118) = -.31, p = .75$), PBC ($t(118) = -.40, p = .69$) and intention ($t(118) = -1.43, p = .15$) or in their EAT scores ($t(118) = .08, p = .94$). Therefore adult children's mean scores appeared to be similar to their mothers'.

Bivariate correlations were also conducted to investigate the association between mothers' and adult children's scores. The results are presented in Table 3. In particular correlation coefficients along the diagonal show that the corresponding beliefs of mothers and their adult children, especially subjective norms, are significantly related.

Insert Table 3 about here

Research question three: Is there a difference in the predictors of healthy eating intention between mothers and adult children?

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To examine whether there was a similar pattern of predictors of intention between mothers and adult children, two hierarchical multiple regression analyses were conducted for mothers and adult children separately (see Tables 4).

Insert Table 4 about here

Table 4 presents the hierarchical multiple regression analysis for mothers' predictors of their intention to eat healthy food regularly. Mothers' TPB variables were entered in the first step followed by their EAT scores in step 2. The first step of the regression analysis showed that the TPB variables explained 77% of the variance in mothers' intention to eat healthy foods regularly ($R^2 = .77$; $F(3,59) = 61.25$; $p < .001$). This did not change on step 2 ($R^2 = .77$; $F(4,59) = 45.84$; $p < .001$) and EAT scores did not add any significant explained variance to the model (R^2 change = .003; $F(1,55) = .67$; $p = .41$). In this final step, attitude and PBC were significant predictors of intention to eat healthy foods regularly.

Table 4 also presents the hierarchical multiple regression analysis for adult children's predictors of their intention to eat healthy foods regularly. Similarly for mothers, the TPB variables were entered in the first step and explained 65% of variance in adult children's intentions ($R^2 = .65$; $F(3,59) = 34.70$; $p < .001$). This did not change on step 2 ($R^2 = .65$; $F(4,59) = 25.68$; $p < .001$) and EAT scores did not add any significant explained variance (R^2 change = .001; $F(1,55) = .15$; $p = .70$). There were only two predictors of adult children's intentions to eat healthy foods regularly and these were attitude and PBC.

The pattern of predictors for mothers and adult children were similar in that the same two predictors were significant. However, in adult children, the beta weights for these predictors were similar but for mothers the beta weight for attitudes was more than double the size of that for PBC.

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Research question four: Do mothers' healthy eating beliefs, disturbance in eating attitudes and recollections of childhood feeding practices predict adult children's healthy eating intentions over and above adult children's own beliefs?

In order to investigate the fourth research question, a hierarchical cross-multiple regression analysis was computed to predict adult children's intention to eat healthy foods regularly from adult children's and mothers' predictors. In order to accomplish this, adult children's TPB beliefs were entered in the first step and their EAT scores were entered in the second step. Mothers' intentions, TPB beliefs and EAT scores were entered in the third, fourth and fifth steps respectively. Mothers' feeding practices from the CFQ were entered in the last step. The summary of the analysis is presented in Table 5.

After introducing adult children's TPB beliefs in step 1 ($R^2 = .65$; $F(3,59) = 34.70$; $p < .001$), step 2 (adding their EAT scores) was also significant ($R^2 = .65$; $F(4,59) = 25.68$; $p < .001$). Step 3 (adding mothers' intention to eat healthy food) was significant ($R^2 = .67$; $F(5,54) = 21.68$; $p < .001$) as well as step 4 (adding mothers' TPB beliefs) ($R^2 = .74$; $F(8,59) = 18.23$; $p < .001$) which accounted for an additional significant 7.3% of variance in adult children's intention (R^2 change = .073; $F(3,51) = 4.8$; $p = .005$). Step 5 (adding mothers' EAT scores) was also significant ($R^2 = .75$; $F(9,59) = 17$; $p < .001$), as well as the last step which added mothers' feeding practices ($R^2 = .76$; $F(12,59) = 12.37$; $p < .001$). Adult children's attitude and PBC, as well as mothers' intentions and PBC were significant predictors of adult children's intentions to eat healthy foods regularly.

Insert Table 5 about here

Discussion

This research aimed to contribute to understanding maternal influence on adult children's healthy eating beliefs and intentions in order to examine the possibility of intergenerational

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transmission. Some support was found for the transmission hypothesis; mothers' beliefs and intentions may be involved in shaping their children's beliefs and intentions in to adulthood but their child feeding practices may have less of an influence.

The first research question addressed a possible association between mothers' feeding practices and their own beliefs and intention to eat healthily, as well as those of their adult children. Mothers' restrictive child feeding practices were significantly correlated with adult children's subjective norm, so restriction by their mothers may influence children's beliefs about the importance of social approval relating to healthy eating even into adulthood. However, this was the only relationship between mothers' feeding practices and adult children's beliefs, suggesting that feeding practices do not have a significant influence on children into adulthood. Instead, positive correlations were found between mothers' restriction of their child's food intake and their own attitude and subjective norm towards healthy eating. It is likely to be the case that restricting sweets and junk food as a maternal feeding practice is shaped by mothers' own beliefs and attitude towards healthy eating. Furthermore, mothers' restrictive feeding practices and concerns about their child's weight were also associated with their own eating psychopathology as assessed by the EAT. This finding supports the idea that maternal eating psychopathology is related to mothers' controlling child feeding practices (Francis and Birch, 2005; Tiggemann and Lowes, 2002). However, it should be noted that in the present study the mean EAT score was well below a score that indicates a disturbance in eating attitude or a diagnosed eating disorder.

The second research question examined concordance between mothers' and adult children's beliefs and intentions. Baker et al. (2000) and other researchers have previously found that young adults' attitudes are more strongly related to perceptions of their parents' attitudes than to parents' own self-reports. In contrast, analyses in the present study demonstrate positive relationships between mothers' and adult children's self-reported TPB beliefs and EAT scores, providing evidence of possible intergenerational transmission of healthy eating attitudes. Stafleu et al. (1995)

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also found some positive associations between young adults and their mothers on components of the TPB, although their findings suggest that mothers and their adult children appear to only share some of the same beliefs. A positive association between mothers and adult children in EAT scores in the present study also suggests a similarity in mothers' and adult children's eating pathologies, supporting previous research (e.g., Elfhag and Linné, 2005).

Rozin et al. (1984) suggested that young adults may share parental beliefs about healthy eating through three different routes; Genetic factors, controlling offspring's exposure to food, and modelling (i.e. displaying attitudes to food for the child to imitate). Since there was only a single association between mothers' feeding practices and adult children's healthy eating beliefs, modelling rather than controlling exposure to food is most likely to explain the correlation in dyads' beliefs and intention about healthy eating in the present study. Baker et al. (2000) found evidence that transmission may be more likely to occur through direct criticism from parents than through modelling. However, this proposition was not examined in the present study.

The third research question examined predictors of mothers' and adult children's healthy eating intentions. Multiple regression analyses showed that slightly more variance in mothers' intention to eat healthy foods regularly (77%) was explained than in adult children's intentions (65%), with attitude explaining more intention to eat healthily for mothers than for adult children. However, the pattern of predictors was the same in both groups; attitude was the best predictor followed by PBC. The final research question investigated whether mothers' healthy eating beliefs, disturbance in eating attitude and recollections of childhood feeding practices predict adult children's healthy eating intentions over and above adult children's own beliefs. Similarly to the multiple regression analyses discussed above, the cross-regression analysis also showed that adult children's attitude and PBC were predictors of their intention to eat healthy foods regularly. Attitude and PBC typically emerge as key predictors of healthy eating among adults and young adults and subjective norm is often the weakest predictor (Åstrosman and Rise, 2001; Louis et al., 2007). Given

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that subjective norm is proposed to incorporate pressures from referent groups such as parents (Ajzen, 1991), the fact that adult children's subjective norms did not predict their intentions might suggest that any influence of parents is not conscious. Disturbance in eating attitude among mothers was not related to adult children's healthy eating intentions but mothers' PBC and intention did significantly predict their adult children's intention to eat healthy food over and above their children's own attitudes and PBC. This suggests that some positive rather than harmful maternal influence was present. Although some transmission may occur through beliefs, as evidenced by correlations between mothers' and children's TPB beliefs, there is also evidence that mothers' beliefs and intentions have an additional influence on their adult children's behavioural intentions. As the TPB posits that intention is the main precursor of behaviour, the fact that mothers' intention was more important than their beliefs in predicting adult children's healthy eating intention may again suggest that mothers' influence may occur through modelling. In line with this, a study from Bois et al. (2005) found that maternal modelling behaviour was a stronger predictor of physical exercise than maternal beliefs. Furthermore, to the extent that PBC reflects actual behavioural control, children may have modelled mothers' lack of control over their own eating behaviour, which may explain why mothers' PBC was also a significant predictor of adult children's intention.

Maternal feeding practices were not found to be significant predictors of adult children's intention to eat healthily. This is similar to the findings of Hewitt and Stephens (2007) and Melbye et al. (2012), although Melbye et al. did find that one of twelve feeding practices was a significant predictor of intention, explaining 3% of the variance. However, on the whole there is relatively little evidence that parental feeding practices have any great influence on young children's healthy eating intentions in these studies and the findings from the present study suggest there is no influence of parental feeding practices among young adults, although reports of these practices were retrospective. Parental practices involve a complex set of interactions. For example, parental control might influence their offspring's healthy food practices but could also increase the intake of snack

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foods (Faith et al., 2004; Brown and Ogden, 2004). Moreover, other influences such as fathers and grandparents may also be important (Savage et al., 2007). Hence, mothers' feeding practices could have less influence than expected on children's healthy eating. This could explain why feeding practices were not key predictors of children's intention in the studies by Hewitt and Stephens and Melbye et al. but instead children's beliefs were the primary predictors.

When interpreting the results of this study, a number of limitations need to be considered. First, this is a small, self-selected sample. The majority of participants were female and no fathers were included. Thus the generalizability of the findings is limited. Second, some scales (e.g. pressure to eat from the CFQ and subjective norms) were found to have a lower reliability and this might have affected the data analysis. Third, the CFQ was modified so that mothers were asked to retrospectively recall the practices they used when their children were young. Thus responses may not have been an accurate recollection, which may have reduced the likelihood of finding relationships between feeding practices and current beliefs and intentions to eat healthily. Fourth, it is not possible to rule out that some mothers and adult children discussed their responses, which would make finding relationships between their responses more likely. Fifth, the present study did not include a follow-up measure of behaviour. The TPB suggests that intention is the main predictor of behaviour, however, research suggests that there is often a gap between the two (Orbell and Sheeran, 1998). Therefore factors that have been found to influence healthy eating intention might not necessarily influence the behaviour itself. While similar studies by Hewitt and Stephens (2007) and Melbye et al. (2012) measured behaviour, they assessed intention and behaviour concurrently rather than conducting a prospective study. Finally, although this study provides some evidence of the intergenerational transmission of eating beliefs and intention beyond childhood into early adulthood, longitudinal research is required in order to draw firmer conclusions.

The present study contributes to the literature as it is one of the few studies to examine the possibility of intergenerational transmission of eating in young adults using a theoretical approach,

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the TPB, to examine beliefs and also to examine both maternal and child self-reported TPB beliefs. The findings provide some support for the transmission hypothesis, which may most likely occur through modelling. Maternal child feeding practices did not appear to influence their adult children's healthy eating intention, a precursor to behaviour, but maternal PBC and intention did have an influence. Additionally, correlations were found between mothers' and adult children's corresponding TPB beliefs. This suggests that it is mothers' beliefs and intentions relating to their own behaviours that may be most important in shaping their children's beliefs and intentions and that their child feeding practices may have less of an influence into adulthood. This implies that interventions focusing on parents' own beliefs and behaviours in order to promote healthy eating or weight loss in young children, may have a positive influence into adulthood. For example, an intervention aimed at increasing PBC may include providing practical tips to support healthy eating such as how to prepare simple, healthy family meals and what healthy treats to purchase. The intervention could also include making action plans, as well as contingency plans, such as how to eat healthily when working late. Positive feedback would be provided throughout the intervention as encouragement. Conclusions from the present study must be taken in the context of the limitations of this study outlined above and theoretically-based, longitudinal research examining intergenerational transmission from childhood into early adulthood is needed.

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Table 1. Descriptive statistics for all variables

	Mothers		Adult children	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Restriction	3.29	.87		
Pressure to eat	3.99	.84		
Concern about child's weight	2.73	1.44		
Attitude	2.06	1.04	2.30	.96
PBC	2.17	1.57	2.26	1.32
Subjective norm	2.71	1.19	2.80	1.06
Intention	2.06	1.29	2.39	1.25
EAT	10.94	9.00	11.10	9.01

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Table 2. Correlations between mothers' feeding practices and mothers' and adult children's beliefs

	Restriction	Pressure to eat	Concern about child's weight
Mothers			
Attitude	-.32*	-.01	-.04
Subjective norm	-.54***	-.12	-.03
PBC	-.24	-.09	.16
Intention	-.21	.10	-.07
EAT	.41***	.06	.28*
Adult children			
Attitude	.03	-.12	-.11
Subjective norm	-.43***	.02	-.09
PBC	.10	-.19	.10
Intention	.07	.07	-.09
EAT	.13	-.22	.05

* $p < .05$; ** $p < .01$; *** $p < .001$.

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Table 3: Correlations between mothers' and adult children's beliefs from the TPB and EAT scores

Adult children	Mothers				
	Attitude	PBC	Subjective norm	Intention	EAT
Attitude	.30*	.14	-.02	.19	.25
PBC	.16	.26*	-.05	.21	.18
Subjective norm	.37**	.38**	.51***	.43**	-.12
Intention	.27*	.14	.06	.35**	.24
EAT	-.17	-.01	-.27*	-.19	.32*

* $p < .05$; ** $p < .01$; *** $p < .001$.

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Table 4: Two Hierarchical Multiple Regression Analyses predicting mothers' intention and adult children's intention from their own TPB beliefs and EAT scores

	Predicting mothers' intention		Predicting adult children's intention	
	Step 1 β	Step 2 β	Step 1 β	Step 2 β
TPB variables				
Attitude	.60***	.61***	.44***	.46***
PBC	.25**	.26**	.42***	.42***
Subjective norm	.12	.10	.14	.13
EAT scores		-.05		-.04
R ²	.77	.77	.65	.65

*** $p < .001$; ** $p < .01$.

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Table 5: Hierarchical Multiple Regression Analysis predicting adult children's intentions from mothers' TPB beliefs, EAT scores, and child feeding practices

	Step 1 β	Step 2 β	Step 3 β	Step 4 β	Step 5 β	Step 6 β
1. TPB beliefs (adult children's)						
Attitude	.44***	.46***	.44***	.44***	.42***	.42***
PBC	.42***	.42***	.41***	.45***	.43***	.43***
Subjective Norm	.14	.13	.08	.09	.11	.11
2. EAT scores		-.04	-.01	.04	.01	.03
3. Intention (mothers')			.14	.55***	.57***	.53**
4. TPB beliefs (mothers')						
Attitude				.20	.23	.22
PBC				.36**	.37**	.34*
Subjective norm				.05	.06	.06
5. EAT scores					.13	.14
6. Child feeding practices						
Restriction						-.04
Pressure to eat						.08
Concern about child's weight						-.04
R ²	.65	.65	.67	.74	.75	.76

* $p < .05$; ** $p < .01$; *** $p < .001$.

